```
**********************************************************************
*                                                                    *
*          QQQQQQQQ     ZZZZZZZZZ   XX      XX                      *
*         QQQQQQQQQQ    ZZZZZZZZ     XX    XX                       *
*         QQ      QQ          ZZ      XX XX                         *
*         QQ      QQ         ZZ         XXX                         *
*         QQ      QQ        ZZ          XXX                         *
*         QQ    QQ QQ      ZZ           XX XX                       *
*         QQQQQQQQQQ      ZZZZZZZZ     XX   XX                     *
*         QQQQQQQQ       ZZZZZZZZZ   XX     XX                    *
*                 QQ                                                 *
*                                                                    *
**********************************************************************
```


The Journal Covering Amateur Radio & Sinclair Computers
ZX-80, Micro Ace, ZX-81, & Timex Sinclair 1000/1500
2025 O'Donnell Drive
Las Cruces, New Mexico
88001

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Details on NU4V's RTTY System
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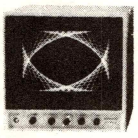

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Editor's Note: Programs are either 'cut & pasted' and put with the heading where practical, or will appear at the nearest convenient insertion point.

```
    LOG-YAGI ANTENNA DESIGN
          PROGRAM
**********************************
    BY MURRAY GORDON:VE1BRA

 FOR ALL YOU ANTENNA BUFFS,HERE
IS A MENU DRIVEN PROGRAM TO DESI
GN A LOG-YAGI ANTENNA.THE ONLY
DATA NEEDED IS THE BANDWIDTH(LOW
ER AND UPPER FREQ.).ANY BAND OR
BANDS CAN BE USED FROM 3.5MHZ TO
148 MHZ.
 THE FIRST SCREEN GIVES INFO AND
SPECS ON THE LOG-YAGI.THE SECOND
SCREEN ALLOWS DATA ENTRY(F1 AND
F2).AFTER A SHORT DELAY THE CAL-
CULATED RESULTS;ARRAY CHARACTER-
ISTICS AND DIMENSIONS MAKE UP
THE THIRD SCREEN.AFTER PRESSING
"C",A MENU APPEARS FOR:

  1)NEW DESIGN:GOES BACK TO THE
                THE START
  2)ANTENNA LAYOUT: DRAWS THE
    LOG-YAGI AND GIVES RESULTS
  3)STOP: GOES TO STOP

 FOR THE ANTENNA LAYOUT,THE
COMPUTER DRAWS THE ANTENNA AND
PRINTS THE SPACING AND LENGTH OF
EACH ELEMENT.

 INFO AND FORMULAS CAME FROM THE
"ARRL ANTENNA ANTHOLOGY" AND "HF
ANTENNAS FOR ALL LOCATIONS".INFO
FOR THE MATCHING SYSTEM IS FOUND
IN EACH OF THE BOOKS.A SAMPLE
PRINT-OUT IS GIVEN.


********PROGRAM LAYOUT**********

  LINE          DESCRIPTION
---------------------------------
  1-94          INTRO:DESCRIP.AND
                SPECS
  100-180       DATA ENTRY
  200-710       FORMULAS
  900-3010      CALCULATED RESULTS
  3020-3075     MENU
  4000-4395     ANTENNA PRINTOUT
                AND RESULTS
  8000-9010     END
**********************************
```

PROGRAM ON NEXT PAGE

CWSS CW Program Mods

Jon Harder, OE2ZDL/K1US

Jon took his ZX & CWSS to OE2-land and had to make a few mods to get them going. He says 20WPM came out at 30 over there. By clipping resistor R30 he corrected the TV scan rate and he wrote the following program to convert the CWSS speeds for overseas use.

```
1890 REM CWSS BY NU4V
1900 REM SPEED ROUTINES REVISED
1910 REM BY OE2ZDL / K1US
2000 CLS
2010 PRINT ,,"      change speed mode"
2020 PRINT
2040 PRINT "       ENTER WPM:15-36"
2050 INPUT A
2060 IF A>50 THEN GOTO 2200
2070 GOTO A+2100
2115 GOTO 2520
2118 GOTO 2526
2120 GOTO 2530
2122 GOTO 2536
2125 GOTO 2540
2128 GOTO 2550
2130 GOTO 2560
2133 GOTO 2570
2136 GOTO 2580
2200 POKE 16562,1
2201 POKE 16561,238
2202 LET A=50
2300 PRINT AT 23-PEEK 16442,0;"
2310 PRINT
2315 POKE 17512,A
2320 GOTO 165
2520 POKE 16562,4
2522 POKE 16561,255
2523 LET A=15
2524 GOTO 2300
2526 POKE 16562,4
2527 POKE 16561,12)
2528 LET A=18
2529 GOTO 2300
2530 POKE 16562,4
2531 POKE 16561,60
2532 LET A=20
2533 GOTO 2300
2536 POKE 16562,3
2537 POKE 16561,255
2538 LET A=22
2539 GOTO 2300
2540 POKE 16562,3
2541 POKE 16561,123
2542 LET A=25
2543 GOTO 2300
2550 POKE 16562,3
2551 POKE 16561,1
2552 LET A=28
2553 GOTO 2300
2560 POKE 16562,2
2561 POKE 16561,245
2562 LET A=30
2563 GOTO 2300
2570 POKE 16562,2
2571 POKE 16561,185
2572 LET A=33
2573 GOTO 2300
2580 POKE 16562,2
2581 POKE 16561,125
2582 LET A=36
2583 GOTO 2300
8500 PAUSE 150
9000 SAVE "CWSs"
9500 GOTO 1
```

XMIT SPEED SET AT ";A;" WPM"

```
  1 REM "LOGYAGI"
  2 REM BY MURRAY GORDON:VE1BRA
  3 REM 83/08/17
  5 REM LOG-YAGI DESIGN
 10 PRINT "     LOG-YAGI ANTENNA
DESIGN"
 20 FOR I=1 TO 32
 25 PRINT "=";
 30 NEXT I
 40 PRINT
 50 PRINT "THE LOG-YAGI ANTENNA
 IS A COMBIN-ATION YAGI AND LOG-
PERIDIC.ITS CHARACTERISTICS ARE
WIDE BAND-  WIDTH AND HIGH GAIN.
"
 55 PRINT
 60 PRINT "THE FOLLOWING IS DES
IGNED WITH  4 DRIVEN ELEMENTS AN
D 2 PASSIVE ELEMENTS(REFLECTOR A
ND DIRECTOR)"
 61 PRINT
 65 PRINT "FORWARD GAIN--------
-----11.5 DB"
 70 PRINT "FRONT-TO-BACK RATIO-
-----32 DB"
 75 PRINT "FRONT-TO-SIDE RATIO-
-----45 DB"
 77 PRINT "INPUT IMPEDANCE-----
-----37 OHM"
 79 PRINT "SWR-----------------
----1.3 TO 1"
 80 PRINT
 85 PRINT "THE ONLY DATA NEEDED
 IS BAND-   WIDTH IN MHZ. ALL LE
NGTHS ARE   IN FEET"
 90 PRINT AT 21,10;"PRESS ■ TO
CONT."
 92 IF INKEY$="C" THEN GOTO 100
 94 IF INKEY$<>"C" THEN GOTO 92
100 CLS
101 PRINT
102 PRINT "          DATA ENTRY "
103 FOR I=1 TO 32
104 PRINT "■";
105 NEXT I
109 PRINT "OPERATING BANDWIDTH
,BETWEEN F1,LOWEST FREQ,AND F2,H
IGHEST FREQ. IN MHZ"
110 PRINT
115 PRINT
120 PRINT "LOWEST FREQ.(MHZ)---
-";
130 INPUT F1
140 PRINT F1
145 PRINT
150 PRINT "HIGHEST FREQ.(MHZ)--
-";
160 INPUT F2
170 PRINT F2
180 PRINT AT 18,8;"PLEASE WAIT"
200 LET B=F2/F1
210 LET B1=1.15*B
215 LET B2=INT (B1*100+.5)/100
300 LET RO=1/B1**(1/3)
305 LET R1=INT (RO*100+.5)/100
310 LET S1=0.2/(1-RO)
330 LET TH=ATN (1/S1)
340 LET T=TH*180/PI
350 LET T1=INT (T*100+.5)/100
400 LET W1=984/F1
410 LET W2=INT (W1*100+.5)/100
420 LET L=(.25-.25/B1)*S1*W1
425 LET LM=INT (L*100+.5)/100
430 LET L1=492/F1
440 LET M1=INT (L1*100+.5)/100
470 LET L2=RO*L1
475 LET M2=INT (L2*100+.5)/100
480 LET L3=RO*L2
485 LET M3=INT (L3*100+.5)/100
490 LET L4=RO*L3
495 LET M4=INT (L4*100+.5)/100
500 LET D1=.5*S1*(L1-L2)
505 LET E1=INT (D1*100+.5)/100
510 LET D2=RO*D1
515 LET E2=INT (D2*100+.5)/100
520 LET D3=RO*D2
522 LET E3=INT (D3*100+.5)/100
525 LET D4=RO*D3
527 LET E4=INT (D4*100+.5)/100
530 LET IR=509.6/F1
535 LET JR=INT (IR*100+.5)/100
540 LET DR=84/F1
545 LET ER=INT (DR*100+.5)/100
550 LET ID=450.8/F1
555 LET JD=INT (ID*100+.5)/100
560 LET DD=148/F1
565 LET ED=INT (DD*100+.5)/100
700 LET BL=L+DD+DR
710 LET BT=INT (BL*100+.5)/100
900 CLS
1000 PRINT "ARRAY CHARACTERISTIC
S:"
1003 PRINT
1005 PRINT "FREQUENCY RANGE(MHZ)
:";F1;"-";F2
1010 PRINT "OPERATING BANDWIDTH:
 ";B
1020 PRINT "DESIGN PARAMETER:
 ";R1
1030 PRINT "APEX HALF ANGLE:
 ";T1
1060 PRINT "FREE-SPACE WAV/LTH:
 ";W2
1070 PRINT "LOG-CELL BOOM LGTH:
 ";LM
1080 PRINT "LONGEST LOG ELEM.:
 ";M1
1090 PRINT "TOTAL BOOM LENGTH:
 ";BT
2000 PRINT
2010 PRINT "ARRAY DIMENSIONS:"
2015 PRINT
2020 PRINT "ELEMENT  LENGTH(FT)
 SPACING(FT)"
2025 PRINT
2030 PRINT "REFLTOR";TAB 10;JR;T
AB 22;ER
2040 PRINT "L1";TAB 10;M1;TAB 22
;E1
2050 PRINT "L2";TAB 10;M2;TAB 22
;E2
2060 PRINT "L3";TAB 10;M3;TAB 22
;E3
2070 PRINT "L4";TAB 10;M4;TAB 22
;ED
2080 PRINT "DIRECTOR";TAB 10;JD
3000 PRINT AT 21,10;"PRESS ■ TO
CONT"
3005 IF INKEY$="C" THEN GOTO 302
0
3010 IF INKEY$<>"C" THEN GOTO 30
05
3020 CLS
3025 PRINT AT 2,12;"MENU"
3030 PRINT AT 4,6;"1--NEW DESIGN
"
3035 PRINT AT 5,6;"2--ANTENNA LA
YOUT"
3040 PRINT AT 6,6;"3--STOP"
3045 PRINT AT 15,6;"SELECT A NUM
BER"
3060 IF INKEY$="1" THEN GOTO 100
3065 IF INKEY$="2" THEN GOTO 400
0
3070 IF INKEY$="3" THEN GOTO 800
0
3075 IF INKEY$<>"3" THEN GOTO 30
60
4000 CLS
4002 FAST
4005 PRINT "LOG-YAGI ANTENNA DES
IGN"
4010 LET Y=22
4015 FOR X=17 TO 63
4020 PLOT X,Y
4025 NEXT X
4030 LET X=17
4035 FOR Y=13 TO 31
4040 GOSUB 4200
4045 LET X=32
4050 FOR Y=10 TO 34
4055 GOSUB 4200
4060 LET X=38
4065 FOR Y=8 TO 36
4070 GOSUB 4200
4075 LET X=44
4080 FOR Y=7 TO 37
4085 GOSUB 4200
4090 LET X=51
4095 FOR Y=5 TO 39
4100 GOSUB 4200
4105 LET X=63
4110 FOR Y=3 TO 41
4115 GOSUB 4200
4117 GOTO 4250
4200 PLOT X,Y
4205 NEXT Y
4210 RETURN
4250 PRINT AT 10,11;"D5";TAB 17;
"D4";TAB 20;"D3";TAB 23;"D2";TAB
 28;"D1"
4255 PRINT AT 6,9;"DIR"
4260 PRINT AT 3,17;"L3"
4262 PRINT AT 4,14;"L4"
4265 PRINT AT 2,21;"L2"
4270 PRINT AT 1,24;"L1"
4275 PRINT AT 2,28;"REF"
4290 SLOW
4292 PRINT AT 1,0;"BANDWIDTH:";F
1;"-";F2
4294 PRINT AT 2,0;"BOOM LTH(FT)=
";BT
4295 PRINT AT 6,0;"SPACING"
4300 PRINT AT 7,0;"D1=";ER
4305 PRINT AT 8,0;"D2=";E1
4310 PRINT AT 9,0;"D3=";E2
4315 PRINT AT 10,0;"D4=";E3
4320 PRINT AT 11,0;"D5=";ED
4340 PRINT AT 15,0;"LENGTH"
4350 PRINT AT 16,0;"REF=";JR
4355 PRINT AT 17,0;"L1 =";M1
4360 PRINT AT 18,0;"L2 =";M2
4365 PRINT AT 19,0;"L3 =";M3
4370 PRINT AT 20,0;"L4 =";M4
4375 PRINT AT 21,0;"DIR=";JD
4390 PRINT AT 21,17;"PRESS ■ TO
CONT"
4392 IF INKEY$="C" THEN GOTO 302
0
4395 IF INKEY$<>"C" THEN GOTO 43
92
8000 STOP
9000 SAVE "LOG-YAGI"
9010 GOTO 5
```

Sample Print-out

SCREEN #1

```
    LOG-YAGI ANTENNA DESIGN
THE LOG-YAGI ANTENNA IS A COMBIN
-ATION YAGI AND LOG-PERIDIC.ITS
CHARACTERISTICS ARE WIDE BAND-
WIDTH AND HIGH GAIN.

THE FOLLOWING IS DESIGNED WITH
4 DRIVEN ELEMENTS AND 2 PASSIVE
ELEMENTS(REFLECTOR AND DIRECTOR)

FORWARD GAIN-------------11.5 DB
FRONT-TO-BACK RATIO------32 DB
FRONT-TO-SIDE RATIO------45 DB
INPUT IMPEDANCE----------37 OHM
SWR----------------------1.3 TO 1

THE ONLY DATA NEEDED IS BAND-
WIDTH IN MHZ. ALL LENGTHS ARE
IN FEET

          PRESS ■ TO CONT,
```

SCREEN #2

```
          DATA ENTRY
..........................
OPERATING BANDWIDTH ,BETWEEN F1,
LOWEST FREQ,AND F2,HIGHEST FREQ.
 IN MHZ


LOWEST FREQ.(MHZ)----14

HIGHEST FREQ.(MHZ)---14.35
```

SCREEN #3

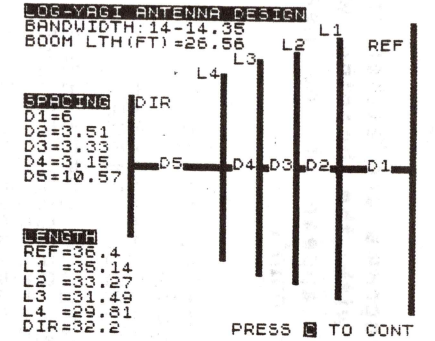
```
          PLEASE WAIT


ARRAY CHARACTERISTICS:

FREQUENCY RANGE(MHZ): 14-14.35
OPERATING BANDWIDTH:  1.025
DESIGN PARAMETER:     0.95
APEX HALF ANGLE:      14.93
FREE-SPACE WAV/LTH:   70.29
LOG-CELL BOOM LGTH:   9.99
LONGEST LOG ELEM.:    35.14
TOTAL BOOM LENGTH:    26.56

ARRAY DIMENSIONS:

ELEMENT   LENGTH(FT)   SPACING(FT)

REFLTOR     36.4          6
L1          35.14         3.51
L2          33.27         3.33
L3          31.49         3.15
L4          29.81         10.57
DIRECTOR    32.2
          PRESS ■ TO CONT
```

SCREEN #4

```
            MENU

     1--NEW DESIGN
     2--ANTENNA LAYOUT
     3--STOP


          SELECT A NUMBER
```

SCREEN #5

```
LOG-YAGI ANTENNA DESIGN
BANDWIDTH:14-14.35
BOOM LTH(FT)=26.56
SPACING
D1=6
D2=3.51
D3=3.33
D4=3.15
D5=10.57

LENGTH
REF=36.4
L1 =35.14
L2 =33.27
L3 =31.49
L4 =29.81
DIR=32.2
```



PRESS ■ TO CONT

Contest Dupe Program

Hank Kohl, K8DD

Here's another contest dupe program, useful for eliminating duplicate contest contacts. It requires 16K and holds 1600 calls. The band variable (B$) should be two characters. The program prints the calls by call areas for each band, but does not sort the calls. Hank used a modified version of KQ2F's Roster6 Program (Apr QZX) to sort. He has hopes of converting it to machine code to speed it up. I bet Bob Berch's compiler would do the trick!

More on Z-XLR8

John, KB4XH

Here's some 'ready to print' comments from another satisfied Z-XLR8 user.

****
Z-XLR8
****

ALEX: THIS IS NOT INTENDED TO BE A "REVIEW",WILL LEAVE THE EXACT DETAIL TO YOUR FINE REPORTING. I DO WANT TO OFFER ENCOURAGEMENT TO THOSE WHO MAY BE A LITTLE BIT RELUCTANT TO TRY THE "EPROM VERSION".BELIEVE ME ITS THE ONLY WAY TO GO.

I AM SURE HAMS WILL HAVE NO PROBLEM,ESPECIALLY THE "PRE-BASH-TYPE".HI SERIOUSLY,ITS EASY IF YOU CAN READ SCHEMATIC,FOLLOW FOIL ON P/C BOARD(BOTH SIDES)AND CAN SOLDER.

I HAVE INSTALLED SEVERAL.ENCOUNTERED ALL LISTED VERSIONS OF ZX81/TIMEX1000. NO FAILURES YET. I CAN DO IT IN 30 MIN.AND THAT INCLUDES 5 MIN TO LET THE EPOXY SET.

THE DECODING CIRCUIT IS EASY, JUST PUT THE 74LS00 AND THE 74LS32 BACK TO BACK,CONNECT PROPER PINS AND SOLDER,EPOXY UNIT TO TOP OF EPROM (WHEN SET)AND CONNECT PROPER PINS TO REQUIRED POINTS ON P/C.

I PREFER THE PARTIALLY DECODED CIRCUIT AS THERE ARE 3 FEWER POINT TO POINTS ON P/C,ALSO FEWER PINS TO CONNECT ON BACK TO BACK IC/S.THIS CIRCUIT ENABLES EPROM FOR MREQ BETWEEN 8192 AND 15283.

IF YOU PLAN USE FOR (SUCH AS HI RES GRAPHICS)THEN THERE IS AN ADVANTAGE IN THE FULLY DECODED CIRCUIT.

YES,ALEX,IT LOADS/SAVES GAZETTEER IN LESS THAN A MIN. AND THE (IL)INDEX LOAD SHOWS IT TO BE 16[illegible]6 IN LENGTH.

JUST A HINT FOR THOSE DISCONNECTING KEYBOARD RIBBON FOR FIRST TIME.--IT IS EASILY TORN OR KINKED--. RECCOMMEND USING STIFF PAPER "BOOKING" (EACH SIDE)BETWEEN THUMB AND FINGER AND APPLY YOUR FORCE "CENTRAL" ON RIBBON,RATHER THAN ON TENDER EDGE. IF YOU DO TEAR OR KINK (BADLY) JUST USE SISSORS, CUT OFF AND RESHAPE AS BEFORE TO FIT SOCKETS.

"NOTE" IF YOUR SISSORS EAT UP TOO MUCH, THEN THIS IS A GOOD TIME TO ADD A LARGER KEYBOARD. MANY OF THEM COME WITH A MUCH BETTER RIBBON AND IS EASY TO PLUG INTO THE SOCKETS.

NOW,LET US ALL THANK BRAD BENNET ET AL AT ADVANCED INTERFACE DESIGNS FOR ONE OF THE GREATEST CONTRIBUTATIONS TO ZX/TIMEX FUN.

I THINK "GOOD MIDDLE OF THE ROAD" PROGRAMED VALUES ARE :
TIMING VALUE 15
CALIBRATION VALUE 234
I FIND IT COMPLETELY RELIABLE FOR THE AVERAGE RIG.

I BELIEVE THIS IS THE BEST THING SINCE "4 WHEEL BRAKES" HI. BY THE WAY, ALEX,DO YOU REMEMBER ---CAPT. EDDIE RICKENBACKER---? HE INVENTED "4 WHEEL BRAKES". I REMEMBER. I AM RETIRED AIRLINE PILOT-AGE 71.

GUD LUK ES (((73))) DE KB4XH.?
--> JOHN <--

Miscellaneous Utilities

Marty Irons, K2MI

Here's four short, useful routines from Marty. One allows multiple numeric inputs at one time, the next allows multiple string inputs, the next allows deletion of a group of BASIC lines (by putting code in front and code behind), and the last allows deletion of a group of BASIC lines by entering first and last line numbers. (PROGRAMS-NEXT PAGE)

MORE MODS TO THE ZXAS-ZXDB

BY

TERRY DALBY, N8BIF

I READ WITH INTEREST THE MODS THAT ROB SUGGS SUGGESTED IN THE MAY ISSUE OF QZX AND FINALLY GOT TWO MODS THAT I HAVE BEEN USING DOCUMENTED. THE MODIFICATION TO ZXDB WILL ENABLE A SCREEN COPY AND I WILL LEAVE IT FOR LAST.THE MOD TO ZXAS WILL BE COVERED NEXT

THE FIRST MOD DEALS WITH THE FORMATION OF A REMARK STATEMENT INWHICH TO ASSEMBLE YOUR CODE. THIS PROCEDURE MAY SEEM A BIT INVOLVED, BUT ONCE YOU SAVE IT, IT WILL SAVE YOU BOTH TIME AND EFFORT. IN OPERATION YOU RUN THE PROGRAM AS USUAL TO MOVE THE ASSEMBLER CODE TO HIGH MEMORY. THEN AFTER DELETING LINES 10, 20 AND 30, YOU "RUN" A SECOND TIME, A PROMPT ASKS YOU HOW MANY BYTES YOU WANT RESERVED. FINALLY, THE

```
    1 REM DUPE BY BAND
    2 REM HANK KOHL K8DD
    3 REM 1340 HENRY, PORT HURON,
 MI. 48060
   10 FAST
   20 LET M=1600
   30 DIM A$(M,8)
   40 FOR I=1 TO M
   50 LET A$(I)="********"
   60 NEXT I
   61 CLS
   62 PRINT "BAND?"
   63 INPUT B$
   64 CLS
   70 PRINT AT 15,0;"£ DISPLAY","
LP PRINT","$ BAND","$ SAVE". C
ORRECT" "INPUT" CALL"
   80 INPUT I$
   85 IF I$="£" THEN GOTO 1000
   90 IF I$="B" THEN GOTO 61
   95 IF I$="." THEN GOTO 2000
  100 IF I$=" " THEN GOTO 65
  105 IF I$="LP" THEN GOTO 6000
  106 IF I$="$" THEN GOTO 600
  110 CLS
  115 REM ""SIZE"" CALL
  120 PRINT I$+" "+B$
  130 IF LEN I$=6 THEN GOTO 155
  140 LET I$=I$+" "
  150 GOTO 130
  155 LET I$=I$+B$
  160 LET H=0
  165 GOTO 5000
  215 REM CHECK FOR DUPE
  220 IF A$(H)=I$ THEN GOTO 270
  230 IF A$(H)="********" THEN GO
TO 290
  240 LET H=H+1
  250 GOTO 220
  270 PRINT AT 5,0;"[redacted]
[redacted]";I$;" ";
H;" IS A DUPE.,,"[redacted]
  280 GOTO 65
  290 LET A$(H)=I$
  295 PRINT AT 0,18;H
  300 GOTO 65
  600 SAVE "DUP[redacted]"
  610 GOTO 64
  999 REM DISPLAY ALL CALLS
 1000 FAST
 1010 CLS
 1020 LET P=1
 1030 FOR L=1 TO M
 1040 IF A$(L)="********" THEN GO
TO 1070
 1050 PRINT P;TAB 5;A$(L)
 1060 LET P=P+1
 1070 NEXT L
 1080 PRINT "DONE"
 1090 STOP
 1095 FAST
 1100 GOTO 65
 1999 REM CORRECT CALL
 2000 PRINT AT 20,0;"CALL NUMBER
TO CORRECT?"
 2010 INPUT V
 2020 PRINT AT 2,8;V;" DELETED."
 2030 LET A$(V)="********"
 2033 PRINT AT 20,0;"
                    "
 2040 GOTO 65
 4999 REM SORT CALL TO CALL AREA
 5000 FOR L=1 TO LEN I$
 5010 LET H=CODE I$(L TO )
 5020 IF H<37 THEN GOTO 5030
 5025 IF H>38 THEN GOTO 5040
 5030 NEXT L
 5040 IF H=28 THEN LET H=3
 5050 IF H=29 THEN LET H=162
 5060 IF H=30 THEN LET H=321
 5070 IF H=31 THEN LET H=480
 5080 IF H=32 THEN LET H=643
 5090 IF H=33 THEN LET H=810
 5100 IF H=34 THEN LET H=972
 5110 IF H=35 THEN LET H=1134
 5120 IF H=36 THEN LET H=1296
 5130 IF H=37 THEN LET H=1458
 5140 GOTO 220
 5999 REM T/S2040 PRINTER ROUTINE
 6000 CLS
 6010 PRINT "DO YOU REALLY WANT T
O PRINT",,,B$;" METER BAND CALLS
???"
 6011 PRINT
 6012 PRINT "IF LAST ENTERED BAND
 IS ""ALL"",  THEN ALL CALLS WIL
L PRINT,,,,"
 6013 PRINT "OTHERWISE ONLY CALLS
 FOR THE    LAST ENTERED BAND WI
LL PRINT."
 6014 PRINT
 6015 PRINT "PRESS ""ENTER"" FOR
MENU."
 6016 PRINT
 6017 PRINT "ENTER ""YES"" TO PRI
NT."
 6020 INPUT P$
 6030 IF P$="YES" THEN GOTO 6050
 6040 GOTO 64
 6050 PRINT "REMARKS"
 6060 INPUT R$
 6070 PRINT R$
 6080 PRINT "OK? (Y/N)"
 6090 INPUT Y$
 7000 IF Y$="N" THEN GOTO 6050
 7010 LPRINT R$
 7015 LPRINT
 7020 LPRINT "NR";TAB 5;"CALL";TA
B 15;"BAND"
 7025 LET P=1
 7030 FOR L=1 TO M
 7035 IF A$(L)="********" THEN GO
TO 7050
 7040 IF A$(L,7 TO 8)=B$ THEN LPR
INT TAB 5;A$(L,1 TO 6);TAB 15;B$
 7042 IF B$="ALL" THEN LPRINT P;T
AB 5;A$(L,1 TO 6);TAB 15;A$(L,7
TO 8)
 7045 LET P=P+1
 7050 NEXT L
 7055 LPRINT "DONE"
 7060 GOTO 64
```

TEST ALL CALLS PRINT

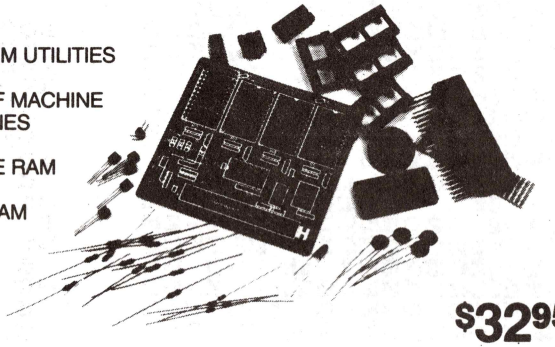
NR	CALL	BAND
1	WA8TKJ	80
2	K8RWL	40
3	K1XA	80
4	WA1308	40
5	K2UA	80
6	AC2A	40
7	W3LPL	80
8	K3SA	80
9	AA3K	40
10	AA4MI	80
11	WM4T	40
12	K5RC	80
13	K5XY	40
14	N6RO	80
15	AA6AA	40
16	K7WA	80
17	KL7GCK	40
18	K8DD	80
19	WA8RRR	40
20	K9BGL	80
21	9N1MM	40

DONE

Extend your ZX81/TS1000/TS1500: Add Memory that won't Forget!

➔ *DESCRIBED IN* **Radio-Electronics**. *JULY/AUGUST 1983*

- ADD YOUR OWN SYSTEM UTILITIES
- BUILD UP A LIBRARY OF MACHINE LANGUAGE SUBROUTINES
- UP TO 8K NONVOLATILE RAM
- USE HM6116LP CMOS RAM OR 2716/2732 EPROM
- COMPATIBLE WITH 16K RAM PACKS



$32.95

plus $1.95 shipping and handling

► *READ THE REVIEWS:*

What a super product!...conceived and executed very nicely...and with quality components.
(SYNTAX QUARTERLY Winter 82)

8K Nonvolatile memory is a gem! It has so many possible uses...I recommend this board most heartily.
(OKLAHOMA S.U.G. Newsletter 1/3)

We found the documentation to be far superior to that (of) most hardware we've received.
(S.U.N. Newsletter Nov/Dec 82)

For versatility this is even better than an EPROM...ranks quite high on the list of "must-haves"...
(SYNC Magazine Mar/Apr 83)

Provides the user with instant software...an extremely versatile memory extension...
(Z-WEST June 83)

INTRODUCTION

This memory board is designed to fill the transparent 8K block of memory (from 8K to 16K) in a ZX81-16K system. This area of memory is an ideal place to store, either permanently or temporarily, machine language routines or data which are to be used by the BASIC system.

Sample utilities are included with the kit.

The use of HM6116LP 2K CMOS RAM memory IC's with their own reserve power supply means that routines stored in the RAM are nonvolatile — the RAM retains its memory even when the ZX81 is switched off or reset. Moreover, being RAM, the routines you store in the memory are easily modified. The lithium cell supplied with the board will maintain sufficient reserve power for almost ten years.

ASSEMBLY

Complete step-by-step instructions in a 20 page manual make assembly of the board easy. The kit (pictured above) is complete with a silkscreened solder-masked printed circuit board, all capacitors, resistors, transistors, sockets, connectors, integrated circuits, and the lithium cell. The board is supplied with one 2K CMOS 6116LP-3 RAM — it will accomodate three more for a total of 8K.

Complete kit with one 2K 6116LP-3	**$32.95**
Additional three 6116LP-3	**$18.00**
Bare pc board & manual	**$13.05**
Kit for EPROM use only	**$22.95**
Assembled & tested with 2K	**$47.95**
Assembled & tested with 8K	**$65.95**
Shipping & handling per order	**$ 1.95**

Send check or money order to the address below:

HUNTER, 1630 FOREST HILLS DRIVE, OKEMOS, MI 48864

```
1000 REM    MULTIPLE INPUTS
1005 DIM N(10)
1010 FOR I=1 TO 10
1020 LET N(I)=99999999
1030 NEXT I
1040 LET S=0
1050 GOSUB 9000
1060 IF Z$="" THEN GOTO 1200
1070 FOR I=1 TO LEN Z$
1080 IF Z$(I) <)",/" AND Z$(I) <)"
" THEN NEXT I
1090 LET S=S+1
1100 LET N(S)=VAL Z$( TO I-1)
1110 LET Z$=Z$(I+1 TO )
1120 GOTO 1060
1200 REM    PRINT RESULTS
1210 FOR I=1 TO 10
1220 PRINT I,N(I)
1230 NEXT I
1240 GOTO 1000
2000 REM    MULTIPLE INPUTS, ALL
            OF EQUAL LENGTHS
2010 GOSUB 9000
2040 LET A=VAL Z$( TO 4)
2050 LET B=VAL Z$(5 TO 9)
2060 LET C=VAL Z$(11 TO 14)
2070 LET D=VAL Z$(16 TO )
2080 PRINT TAB 0;,A;,B;,C;,D
2090 GOTO 2010
9000 REM    INPUT ROUTINE
9010 PRINT AT 0,0,"DEMONSTRATION
 OF MULTIPLE INPUTS";TAB 0,/"INP
UT DATA,SEPARATED BY COMMAS
                OR SPACES";TAB
 0,,    0 = QUIT",TAB 0;"    C
= COPY";TAB 0;;
9020 INPUT Z$
9030 IF Z$="0" THEN STOP
9040 IF Z$="C" THEN COPY
9050 IF Z$="C" OR Z$="" THEN GOT
O 9020
9060 CLS
9070 PRINT 97 8,0;"Z$ = """;Z$;"
""";TAB 0;;
9090 RETURN

 100 REM    ROUTINE TO DELETE A
            GROUP OF LINES OF
            BASIC CODE

 110 REM    BY MARTY IRONS, K2MI
            46 MAGIC CIRCLE DRIVE
            GOSHEN, NY 10924

 120 REM    AUGUST, 1983

 130 REM    LINES 198 AND 199 GO
            BEFORE FIRST LINE
            TO BE DELETED.

 140 REM    LINES 251 TO 254 GO
            AFTER LAST LINE
            TO BE DELETED.

 150 REM    GOTO 198 TO EXECUTE,
            THEN DELETE 198, AND
            ALL THE OTHER LINES
            WILL DISAPPEAR.
 198 LET S=PEEK 16425+256*PEEK
6426-49
 199 GOTO 251
 200 REM THIS IS THE FIRST LINE
TO BE DELETED.
 210 REM    LINES 198 TO 254
 220 REM    WILL BE DELETED
 230 REM    WHEN 198 IS DELETED.
 250 REM THIS IS THE LAST LINE
TO BE DELETED.
 251 LET L=PEEK 16425+256*PEEK
6426-S+57
 252 POKE S,INT (L/256)
 253 POKE S-1,L-256*PEEK S
 254 STOP
 255 REM    THIS LINE WILL NOT
            BE DELETED.

1000 REM    THIS ROUTINE ADJUSTS
            THE LENGTH OF LINE
            198.

1010 REM    WHEN YOU DELETE LINE
            198, YOU DELETE ALL
            THOSE FROM 198 TO
```

```
DEMONSTRATION OF MULTIPLE INPUTS

INPUT DATA,SEPARATED BY COMMAS
    OR SPACES

    0 = QUIT
    C = COPY

Z$ = "1 12 123 1234 12345 123456
,1234567,12345678,123456789,1234
567890"

1                   1
2                   12
3                   123
4                   1234
5                   12345
6                   123456
7                   1234567
8                   12345678
9                   123456789
10                  1234567900
DEMONSTRATION OF MULTIPLE INPUTS

INPUT DATA,SEPARATED BY COMMAS
    OR SPACES

    0 = QUIT
    C = COPY

Z$ = "125 3.14159 2*PI*12 12+*3
1.55E8 245.7,400^2,3**3-6,-7+1/4
,-7-1/4"

1                   125
2                   3.14159
3                   75.398224
4                   1728
5                   1550000
6                   245.7
7                   200
8                   21
9                   -5.75
10                  -7.25
DEMONSTRATION OF MULTIPLE INPUTS

INPUT DATA,SEPARATED BY COMMAS
    OR SPACES

    0 = QUIT
    C = COPY

Z$ = "0001 0012 0123 1234"


1
12
123
1234

    100 REM    ROUTINE TO DELETE
               LINES OF BASIC CODE

    110 REM    MARTY IRONS, K2MI
               46 MAGIC CIRCLE DRIVE
               GOSHEN, NY 10924

    120 REM    THIS ROUTINE CHANGES
               THE LENGTH OF THE
               FIRST LINE SO THAT IT
               INCLUDES ALL LINES TO
               BE DELETED.

    130 REM    GOTO 8400, THEN INPUT
               FIRST AND LAST LINES
               TO BE DELETED.

    140 REM    THEN DELETE THE FIRST
               LINE NUMBER AND WATCH
               THE OTHERS DISAPPEAR
               WITH IT.

    150 REM    IF YOU NEED SPACE,
               DELETE ALL REM AND
               PRINT STATEMENTS.

   8400 REM    DELETE LINES
   8402 PRINT " INPUT FIRST, LAST L
INES"
   8404 INPUT S
   8406 INPUT E
   8408 CLS
   8410 LET FA=0
```

```
8412 LET A=16509
8414 LET LN=256*PEEK A+PEEK (A+1
)
8416 LET LL=PEEK (A+2)+256*PEEK
(A+3)+4
8417 IF LN>=S THEN PRINT A;TAB 8
;LN,LL;TAB 24;CHR$ PEEK (A+4)
8418 IF LN>=S AND FA=0 THEN LET
FA=A+2
8420 IF LN>E THEN GOTO 8436
8422 LET A=A+LL
8424 GOTO 8414
8430 LET L=A-FA-2
8431 PRINT ,,S,FA,E,A,L
8432 POKE FA+1,INT (L/256)
8434 POKE FA,L-256*PEEK (FA+1)
8436 PRINT "DELETE LINE ";S
8440 STOP

THIS IS A/VERY LONG STRING/WHICH
 WILL BE BROKEN/INTO SIX PARTS/W
HICH ARE SEPARATED/BY SLASHES.



THIS IS A

VERY LONG STRING

WHICH WILL BE BROKEN

INTO SIX PARTS

WHICH ARE SEPARATED

BY SLASHES.


 100 REM        MULTIPLE INPUT
                BY MARTIN IRONS
                GOSHEN, NEW YORK

 110 REM        GET DATA IN ONE
                LONG STRING

 120 INPUT Z$
 130 IF Z$="0" THEN STOP
 140 CLS
 150 PRINT Z$
 200 REM        LOAD SIX STRINGS

 210 GOSUB 8500
 220 LET A$=U$
 230 GOSUB 8500
 240 LET B$=U$
 250 GOSUB 8500
 260 LET C$=U$
 270 GOSUB 8500
 280 LET D$=U$
 290 GOSUB 8500
 300 LET E$=U$
 310 GOSUB 8500
 320 LET F$=U$
 400 REM        PRINT SIX STRINGS

 410 PRINT AT 10,0;A$;AT 12,0;B$
;AT 14,0;C$;AT 16,0;D$;AT 18,0;E
$;AT 20,0;F$
 420 GOTO 100
8500 REM        SLICER ROUTINE

8510 REM        NOTE THAT Z$ IS
                DESTROYED

8520 LET U$=""
8530 IF Z$="" THEN RETURN
8540 FOR I=1 TO LEN Z$
8550 IF Z$(I) <)"/" THEN NEXT I
8560 LET U$=Z$( TO I-1)
8570 LET Z$=Z$(I+1 TO )
8590 RETURN
```

NOTES

HAWG WILD Software, Box 7668, Little Rock, AR 72217, announces a new series of programs for radio amateurs. They say that their present offerings are the direct result of an ongoing author search.

T-S Horizons is a new magazine for the Timex-Sinclair user. It is small, inexpensive, and has a number of interesting hardware type articles that many of you will be interested in. For information write to T-S Horizons; 2002 Summit St.; Portsmouth, OH 45662.

It helps if whenever you write to an advertiser or potential advertiser like the two businesses above to say that you heard of them in QZX because adverising income, such as it is, helps to pay for bigger issues. Futhermore advertisers insist on a response that they can recognize. One of the ads which will appear next month appears because some of you wrote him because of an announcement which appeared here and you told him so.

INDEX!! INDEX!!

KA2LHO has been working on an index of articles and programs in the "new" QZX since it started up again. It has now been completed through the October issue by the use of the TIMEX software package "VU-FILE". He says that he will make the index available on tape to any QZX subscriber who sends him a tape and return postage. The program is very versatile and allows search by any character, string of characters, numbers, or catetory. A printout is also an option with the list being ordered by any user selected category. He will also update the index as each new issue is received. To take advantage of this generous offer send your tape and postage to Kraig D. Pritts, KA2LHO, Box 198, Leonardsville, NY, 13364.

ROUTINE CREATES A 9998 REM LINE WITH THE CORRECT NUMBER OF FULL STOPS.

THE ROUTINE IS COMPRISED OF A MACHINE CODE ROUTINE AND THE BASIC DRIVER. FIRST STEP IS TO LOAD THE ZXAS AS USUAL BUT WITHOUT RUNNING. NEXT ADD THE THESE LINES:

```
11 REM
33 FAST
35 PRINT "HOW MANY BYTES?"
40 INPUT A
45 POKE 16515, INT(A/256)
50 POKE 16514, A-256*INT (A/256)
55 RAND USR 16514
60 SLOW
65 STOP
```

AND LASTLY, 1 REM....(WITH A TOTAL OF 81 FULL STOPS)

AS A SIDELIGHT, FOR SAFETY I ALWAYS INCLUDE A REM STATEMENT AFTER LONG MACHINE CODE LINES, SOMETIMES WITHOUT THIS PRECAUTION MANIPULAITING THE LONG LINE CAUSE THE SYSTEM TO CRASH.

NEXT LOAD THE FOLLOWING CODE, READING LEFT TO RIGHT, INTO THE SPACES BEGINNING AT 16514.

```
0   0   1   6   0   42  12  64
229 205 158 9   225 229 54  39
35  54  14  35  209 229 213 54
2   35  54  0   35  54  234 35
64  118 225 1   6   0   9   34
12  64  43  237 75  130 64  197
229 205 155 9   225 54  27  193
209 235 213 94  35  86  19  114
43  115 235 225 213 11  62  0
184 32  223 185 32  225 209 201
```

YOU CAN USE A LOADER SUCH AS:

```
9100 FOR N=16514 TO 16594
9101 INPUT A
9102 POKE N,A
9103 NEXT N
```

AFTER THE CODE IS LOADED, YOU CAN DELETE THE LOADER AND EDIT LINE 1 AND CHANGE IT TO 11. DELETE LINE 1. NOW SAVE "ZXAS-2" EITHER DIRECTLY OR BY INCLUDING

```
9990 SAVE "ZXAS-2"  9995 RUN.
```

FINALY, THE WORK IS DONE, TYPE IN NEW AND ENTER. LOAD THE ZXAS-2 AND RUN. AFTER THE ASSEMBLER IS TRANSFERED, DELETE LINES 10, 20, AND 30. NOW RUN AGAIN AND ENTER THE AMOUNT THAT YOU WANT,SIT BACK ITS FAST DEPENDING ON THE SIZE OF THE INPUT, IT MIGHT TAKE 10 OR 15 SECONDS TO CREATE THE REM STATEMENT. AFTER COMPLETION, SIMPLY DELETE LINES 11, 33, 35, 40, 45, 50, 55, 60, AND 65. NOW, REMEMBERING THE SAFETY REM LINE, EDIT LINE 9998 TO LINE 1 AND YOU ARE ALL ... DONE? AT LEAST YOU ARE READY TO START WRITING.

NOW THAT THE HARD WORK IS DONE, THE MOD TO THE ZXDB WILL BE A BREEZE. AGAIN, LOAD ZXDB WITHOUT RUNNING.

SINCE IT REQIRES ONLY FOUR BYTES TO BE CHANGED, WE WILL DO IT DIRECTLY BY POKEING:

```
16683 - 63
16937 - 105
16938 - 8
16939 - 201
```

IF YOU RUN THE DISASSEMBLER, YOU WILL FIND THE DISASSEMBLED LISTING:

```
411B CP  27; B
411D JP  Z,4980
4120 CP  29; D
4122 JP  Z,44E2
4125 CP  38; S
4127 JP  Z,41BF
412A CP  3F; Z
412C JP  Z;4228
412F CP  36; 0
4131 JP  Z,46C2
4134 CP  2C; G
4136 JP  Z,415F
4139 CP  2B; F
413B JP  Z,4262
413E CP  32; M
4140 JP  Z,4291
4143 CP  3C; W
4145 JP  Z,493D
4148 CP  28; C
414A JP  Z,42A6
414D CP  2A; E
414F JP  Z,4198
4152 CP  3B; V
4154 JP  Z,4185
```

I HAVE INCLUDED THIS "MENU" TO SHOW THAT YOU CAN CHANGE ANY OF THE 12 CHOICES (THE ONE THAT I CHOSE TO LOSE WAS "A") TO "Z" THE "COPY" KEY. WHICH EVER YOU CHOSE, ALSO CHANGE THE SAME JUMP LOCATION.

AT THE JUMP LOCATION, YOU WOULD FIND:

```
4228 CALL 0869  (SCREEN COPY)
4228 RET
```

WHEN YOU HAVE A SCREEN THAT YOU WANT A COPY OF, JUST HIT "0" AND THEN "Z". YOUR SCREEN COPY WILL INCLUDE THE LAST "0" AND "*Z" SO REALLY YOU CAN ONLY COPY 20 LINES. YOU END WITH A "*" PROMPT RETURNING YOU TO THE MENU

ONCE YOU GET IT THE WAY YOU LIKE, SAVE "ZXDB-2".

I HAVE NOT LOOKED INTO OTHER MODS BUT I WOULD BE INTERESTED IN ANY THAT YOU HAVE. THESE TWO UTILITIES, EVEN WITH A COUPLE OF DRAWBACKS, IS A VASTLY POWERFULL TOOL. I HOPE THAT YOU FIND THESE TWO MODS USEFUL.

Terry is also working on a 10 function menu-driven toolkit program that resides in less

than 1K, having several useful utilities. Hope to see it in QZX soon! He is a happy user of W3ZQN's TYPE Program & AF8J's RTTY Program (see previous QZX issues).

Editor's Doings

Bo Barry, W44GHV/5

First, I want to apologize for the late issue. I do have several legitimate 'excuses', but the predominant one being an urgent desire to 'take a short breather' after getting an already late issue out. In an attempt to get caught up, Alex and I are already putting the November issue together and hope to get it out a little earlier in the month! Bear with us.

Next, a brief update on the new Timex TS-1500. My ace technician at work was itching to get into computers and found an ad for the 1500. He found out that they really did exist, so we ordered two and I now have a brand new 1500. Why would someone need both a 1000 and a 1500? Well, I got tired of carring mine back and forth every day. My students stay busy working (and playing) with it at work, hooking gadgets to it, etc. So now I have one to keep at home for my own use!

First impressions of the 1500: I love it. The keyboard is better, but not perfect. Having rubber keytops that must be poked firmly, it is much better than its predecessor. I am wondering how long the painted letters on them will last? It runs cooler and has 16K internal, using 4116 dynamic RAMs. I bet an additional 16K could be piggy backed inside. The edge connector looks identical to the TS1000, and a Command Cartridge Player ($20) module connects for use of program cartridges (up to 24K programs). I had no trouble finding the right point to add a cable for direct video output. Here's a potential problem - all the connectors are on the back of the unit, so the wide add-ons will not fit! More comments later as I find time to use it. I wonder why it took so long for the boat from its birthplace, Portugal, to get here. Mine has a serial number of about 1000, so I guess it came on the FIRST boat! I think it will be a big seller (at about $65) when it hits the market in full force.

UNCLASSIFIED ADS

FOR SALE: ZX81/TS1000 edgeboard wire-wrap connectors; keyed; bifurcated contacts; manufactured by TI; $5.00 each. Pc piggy-back extender boards; $1.50 each. Economical experimenting with Radio-Shack's 276-158 and 161 project boaeds and these connectors. Add $0.75 shipping per order. Paul Hunter, 1630 Forest Hills Drive, Okemos, MI 48864.

FOR SALE: TS1000 HAM HELPER PROGRAMS - Some written for county hunting and all are in BASIC for easy mods to suit individual taste. Write for details (SASE appreciated) to KA2LHO, Kraig D. Pritts, Box 198, Leonardsville, NY 13364 (see J1-Ag issue for sample).

FOR SALE: SATPLOT is a 16K tracking board program (circular orbits only) with a plastic map overlay kit for your screen. Shows satellite, space shuttle, etc, as a moving blip on a black background, in real time. Displays suborbital latitude and longitude, azimuth & elevation & UTC. Features orbit scheduling, automatic QTH plot, re-save, clock speed adjust, and much more. Use your AMS-81 program for precise tracking, then use SATPLOT for a visual display of the orbit. Comes with anticipated orbital data for the STS9 'ham in space' flight. North America, Caribbean, Hawaii only. $13.50 ppd., guaranteed. Bob Dalleske, W6AMW, Box 220, Mc Cloud, CA 96057.

FOR SALE:

**** Handy utility programs ****
**** by a professional ****
U101 Multiple inputs-input A,B,C
U102 Cross-Reference goto/gosubs
U103 Find address of basic lines
U104 Print banners 32 X normal
U105 Delete many basic lines
U106 Hex/decimal loader/editors
Each listing $1.00 and long sase
6 for $5.00, sase, 2 stamps
DR 1 8K/13K hex/dec disassembler
tape/instructions $9.00 ppd

**** Martin Irons, 46 Magic ****
**** Circle, Goshen NY 10924 ****

WANTED: NCR-260-5 computer operator's and maintenance manuals. E. Lane, K7JGR, 8122 E. Hubbell, Scottsdale, Arizona. 85257

FOR SALE: ASCII/RTTY TX/RX programs. Works with just 2K Ram. Features include: word wrap around, auto scroll, unshift on space (RTTY), auto CR/LF, auto transmit (ASCII), works with my previous interface by moving one connection. You receive the ASCII and RTTY programs and simplified interface schematic for $15.00. Send order to Larry Willson, 149 Hoehn Ct. P.O. Box 465, Dimondale, Mich. 48821.

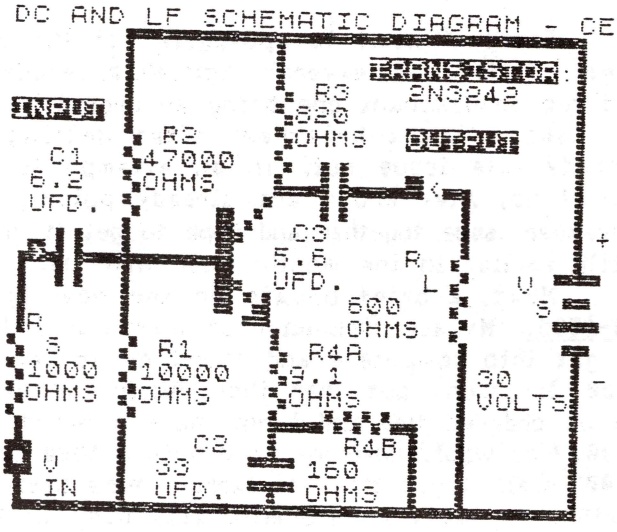
Products in Review

First, here is a long overdue review of Fred Nachbaur's SyncWare News. (See his previous contributions to QZX.) Since he isn't a ham, we gave him a call of *** and he was grateful. Anyhow, in April '83 he began SyncWare News, and sent out a lot of complimentary copies. His publication is slanted toward professional & educational software for electronic applications, for the Timex/Sinclair computers of course.**

Let me give you the titles of articles in the three issues I have received to date and you can decide if SyncWare News is for you. Polar/rectangular conversions, straight line/vector plotting, integration/RMS calculations, multiple data plotting, byte-pyncher programs, simultaneous linear equation solutions, & electronic circuit analysis. Also offered are hardware tips and product updates. If you are into math' or want to learn more about it, you will enjoy Fred's publication. The articles are well written, like a mini-text, and the programs not only save the kids a lot of time doing their homework, but are useful for dusting the cobwebs out of dad's/mom's head. I have thoroughly enjoyed them all and hope to find time to experiment with them soon.

If interested, send $15 for 6 issues to SyncWare Co., PO Box 5177, El Monte, Calif. 91734

Also received from Fred was a copy of his Common Emitter Transistor Amplifier Design Manual/Program. This 40 page booklet is really neat! It's a complete tutorial on the design & application of Class A common emitter transistor design. Here's a list of the MENU topics: 1. Input/View transistor specs, 2. Design amplifier from specs, 3. Analyze Q-point stability, 4. Low freq/mid-band response, 5. High freq response, 6. Standard component values, 7. Schematic diagram, 8. Re-run analysis. This booklet will take the beginner completely thru transistor designs steps, plotting nice voltage, current, & beta plots, providing useful tables of operating parameters and the neat schematic (see below). The math is not 'heavy' in this booklet, in fact the computer does it all for you. I highly recommend this if you are interested in circuit design. It sells for $20. Or just drop him a note, telling him I sent you, and ask for more details on this booklet or his News.



QZX FRIENDS

YV5ABE -- Rolando is a new ham with a T/S 1000. He has an ICOM 720A and a 40 m dipole.

W4SYF -- "Al" is 75 and operates a solar station which includes a T/S 1000. He sent us a nice beam pointing program.

K4UBR -- Jerry has both a ZX81 and a T/S 1000. He used to get QZX when K2MI was publishing it. He says he has a RTTY program which we hope to get him to share with the rest of you.

KP4MD -- Charles is a navy physician in Puerto Rico. He has been a ham for 13 years and has written a number of programs for his ZX81, which we hope to share with you.

HP1AC -- Cam has just installed a Suntronics keyboard which is working fine. He also had a suggestion for saving postage on overseas mailing which we will look into.

K6SWN -- Darwin started out with a 2k Micro-Ace and now has a 64k ZX81. He says that "The Best of Sync" by Creative Computing translates some of the early ZX80 programs to make them useful on the ZX81.

K2MI -- Marty says he has kept very busy after giving up QZX. He sent along some basic utility pro-

grams. He also said he had heard that NU4V (of CW program fame) is about to release a good RTTY send-receive program.

W6AMW -- Bob says he has purchased a Bug Byte modem for accessing Compuserve. He also sent in a net correction and an ad (see unclassifieds).

OE2ZDL -- Jon (also K1US) says that QZX is his main source of information because he cannot hear the nets in Europe. However some European nets have been added to the directory.

W6JEO -- Carl asked for a sample QZX issue some time ago, but it took the good review in 73 Magazine to get him to finally subscribe.

QZX NET INFO

FREQ	TIME	DAY	SOURCE	LOCATION
14.150	1900	THU	G4INP	EUROPE
14.200	1000	SAT	G4INP	EUROPE
14.200	1400	SAT	G4INP	EUROPE
14.200	1000	SUN	G4INP	EUROPE
14.329	2000	SUN	W9CQD	USA
14.345	0100	THU	NU4V	USA
146.04	0100	THU	KB3YT	PITTSBURGH
146.16	0000	THU	N1CB	VERMONT/NH
146.67	0230	TUE	K5XY	MANHATTEN,NY
147.84	0000	WED	WB5HVS	NEW ORLEANS
3.600	1930	WED	G4INP	EUROPE
3.980	0100	SAT	N3CJP	EAST COAST
4.020	0000	WED	WB5HVS	LA MARS
7.228	1900	SAT	K4KEP	EAST COAST
7.228	1900	SUN	K4KEP	EAST COAST
7.235	1700	SAT	W6AMW	WEST COAST
7.240	1700	SUN	KQ2F	EAST COAST
7.245	0001	WED	W9CQD	USA

BITS AND BYTES

25. VE1BRA says that since he put his ZX81 in a Hammond cabinet, there was no more use for the old chassis. He peeled off the keyboard and cut out the logos and glued them over the keycaps. The functions had to be cut out separately and glued on the front side of the keycaps; they fit well and they look not bad. (A lot of work.)

26. VE1BRA also says that with 12 VDC in the shack, he used a 7885 voltage regulator to power the computer. It seems to reduce some of the interference on the TV screen.

27. AD1B says that I recently purchased a Suntronics Keyboard for my ZX 1000. There is no point in spending any money on a new computer, even with the latest round of price reductions because my Sinclair does a good job. The only drawback with the computer is the lack of a true keyboard. The Suntronics filled the gap very nicely and I have enjoyed it very much.One problem did develop with the keyboard after a couple of months of operation. The keying became erratic and unpredictable. The cause of the problem was oxidation of the copper terminals on the connecter ribbon. I thought of the usual methods used to clean these, eraser, carbon tet, etc. Then I decided to fix the business once and for all by hard wiring the keyboard to the PC board. This worked out very well. I used multi-strand 18 gauge wire for the job. It only takes 13 pieces.In order to make the keyboard a hard-wired accessory, some care must be taken in the process. The first two attempts proved unsatisfactory due to wiring errors. Go slow and copy the wiring pattern indicated by the two ribbon connectors in the computer. One other thing, it has been recommended that the soldering iron be heated, then unplugged before working on the computer PC board. The reason is to avoid the damage that static electricity can sometimes cause.

73, W4GHV and K5XY

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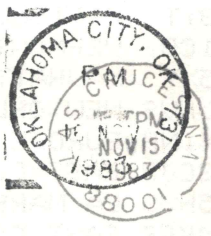

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